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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/792,324	03/04/2004	Yuui Shimizu	249979US2S	4386
22850	7590	06/24/2005	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			HOANG, HUAN	
			ART UNIT	PAPER NUMBER
			2827	

DATE MAILED: 06/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/792,324

Applicant(s)

SHIMIZU, YUUI

Examiner

Huan Hoang

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 9-11, 14, 23-26, 30 and 31 is/are rejected.
- 7) ☒ Claim(s) 8, 12, 13, 15-22, 27-29 and 32-36 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 051204.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 3-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The recitation "wherein the row driver comprises a first current source which supplies the first write current and a second current source which supplies the first write current smaller than the current supplied by the first current source." (claim 3, lines 1-5) is unclear. According to claim 3, the first current source and the second current source both supply the first write current. How can the first write current be smaller than the current (the first write current) supplied by the first current source?

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

4. Claims 1, 2, 6, 7, 9-11, 14, 23-26, 30 and 31 are rejected under 35 U.S.C. 102(a) as being anticipated by Hidaka.

Hidaka discloses a memory device and a method having all the elements and steps as recited in claims 1, 2, 6, 7, 9-11, 14, 23-26, 30 and 31 as follows:

a plurality of word lines (RWL1, WWL1, ... RWLn, WWLn, DRWL2, DRWL1, Fig.2);

a plurality of bit lines (BL1, ... BLm, Fig. 2);

a first memory cell (MC) including a magneto-resistive element which has either a first resistance (R1) or a second resistance (R0) smaller than the first resistance (paragraph [0076]);

a second memory cell (DMC) including a magneto-resistive element which has a resistance (Rd) between the first and second resistances (paragraph [0076]);

a memory cell array (10, Fig. 2) including the first and second memory cells disposed in intersections of the word line and bit line;

a row decoder (20, Fig. 1)

a row driver (30, Fig. 1) which supplies a first write current to the word line (paragraph [0080]);

a column decoder (25, Fig. 1);

a column driver (50 and 60) which supplies a second write current to the bit line (paragraph [0070]);

a sense amplifier (175, Fig. 4);

wherein the current value of the first write current supplied by the row driver is variable in accordance with the word line (selected or non-selected);

wherein the current value of the second write current supplied by the column driver is variable in accordance with the bit line (selected or non-selected).

Wherein the second memory cells are arranged at the intersection of any one bit line (any bit line BL1, /BL1... BLm, /BLm) and word lines (DRWL1, DRWL2, Fig. 2)

Regarding claim 30, a row driver (30) which supplies a first write current to the word lines to set the magneto-resistive elements included in the first memory cells at the first or second resistance and which supplies a second current write current to the word lines to set the magneto-resistive elements included in the second memory cell to a resistance intermediate between the first and second resistances (paragraphs [0012] – [0016].

Regarding to claim 31, the step of precharging the bit line is disclosed in paragraph [0094].

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hidaka in view of Shi et al..

Hidaka discloses all the limitations of claims 3 and 4 except for the row driver comprising a first current source and a second current source. However, Shi et al.

discloses the use of a plurality of current sources (134, 136, 166 and 168) to provide a write current to the selected word line in a write operation. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a plurality of current sources to provide a write current to the selected word line in a write operation.

***Allowable Subject Matter***

7. Claims 8, 12, 13, 15-22, 27-29 and 32-36 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The prior art does not teach or suggest the following:

a hold circuit which holds the value of the first write current required to set the resistance of the magneto-resistive element of the second memory cell to a value between the first and second resistances.

a judgment circuit and a control circuit.

wherein the driver circuit comprises a first current source provided for the word lines and a second current source provided for the word lines and having a greater current drive ability than the first current source.

wherein the second data is written into the reference cell at a die sort test time.

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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Huan Hoang whose telephone number is (571) 272-1779. The examiner can normally be reached on Mon-Fri 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoai Ho can be reached on (571) 272-1777. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Huan Hoang  
Primary Examiner  
Art Unit 2827

HH  
6/20/05.